

REMARKS

Claims 1, 10-13, 15, 16, 30 and 32 are pending in the application, claims 29 and 31 having been canceled herein, claims 2-9, 14 and 17-28 having been canceled in previous amendments. Reconsideration in view of the following remarks is kindly requested.

ENTRY OF AMENDMENT REQUESTED

Applicants respectfully request entry of this amendment by the Examiner since it raises no new issues; and the claims as amended do not require any further consideration or search by the Examiner. Further, Applicants submit that, at the least, the amendment should be entered since it reduces the number of substantive and/or formal issues to place the application in better form for appeal.

CLAIM OBJECTIONS

The Examiner objects to claim 12 because of an informality. Accordingly, Applicants have amended claim 12 so as to clarify the claim and hence overcome the objection. Withdrawal of the objection is kindly requested.

REJECTION UNDER 35 U.S.C. § 112

Claims 30 and 32 stand rejected under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point and distinctly claim the subject matter which Applicant regards as the invention. By this amendment, Applicants have clarified claims 30 and 32, consistent with the specification as described on page 6, line 16 to page 7, line 17 and again at page 8, line 27 to page 9, line 7. Withdrawal of the rejection is kindly requested.

REJECTION UNDER 35 U.S.C. § 102

Claims 1, 10-13, 15, 16 and 29-32 stand rejected under 35 U.S.C. § 102(b) as being anticipated by Zdeblick, et al. (U.S. Pat. No. 5,129,132). This rejection is respectfully traversed.

Applicants respectively submit that Zdeblick, et al. fails to teach or suggest a method of producing an acoustic resonator device comprising at least depositing a first metal film directly on a substrate and depositing piezoelectric material on said first metal film to form a single continuous piezoelectric layer, in combination with removing some or all piezoelectric material from said single piezoelectric layer not involved in signal transmission by selective etching process; in connection with the other steps recited in independent claim 1, and as somewhat similarly recited in independent claim 13.

Zdeblick, et al. is directed to a method of forming an integrated single lever bimorph cantilever. The Examiner refers to Fig. 3-10 of Zdeblick, et al., which illustrate various fabrication steps for making manufacturing and integrated single lever bimorph cantilever with tip for a scanning tunneling microscope. Regarding Fig. 3 for example, a spacer layer 34 is provided on a substrate 32, between the substrate 32 and a series of electrodes 36, 38 and 40. The spacer layer 34 is critical to the formation of the portion of the bimorph that is to be cantilevered. In particular, the bimorph would be attached to the substrate 32 at the end opposite the tip, so no spacer material is formed in this attachment region.

Accordingly, the spacer layer 34 will be later be removed to provide a space between an upper most surface (most positive Z coordinate) of the substrate 32 and an undersurface (most negative z coordinate). This will provide a clearance space for the piezoelectric bimorph to move along the Z-axis. (See Col. 7, lines 5-16) Accordingly, the first metal film relied on by the Examiner (conducted metals 36, 38 and 40), are not deposited directly on the substrate, but on the spacer layer 34. Applicants submit that the claims are allowable for at least this reason.

Notwithstanding the above, Zdeblick et al. includes a plurality of piezoelectric layers, 42, 46, and not a single continuous piezoelectric layer that will be etched by a selective etching process, as recited in independent claims 1 and 13. In fact, the only necessary etching of the piezoelectric layers 42 and 46 in Zdeblick et al. is to define the

sidewalls of the bimorph cantilever beam, which would cause some propagation losses in the piezoelectric material that is outside edges 74 and 76 of the metal electrode (See Col. 10, lines 48-54). Accordingly, some or all piezoelectric materials is not removed from a single piezoelectric layer in Zdeblick, as there are multiple piezoelectric layers. Further, layers 42 and 44 extend beyond edges of the electrode and thus contribute to propagation losses (see FIGS. 8 or 9), as this piezo will be involved in signal transmission and thus will be subject to lateral propagation losses. For at least this additional reason, the rejection fails. The Examiner is kindly requested to indicate allowance of each of the amended claims 1 and 13.

Certain features in the dependent claims make the distinctions over Zdeblick more apparent. Claim 16 recites that “at least some of the removed piezoelectric material forms a void which is back filled with a different material”. The Examiner alleges that Zdeblick teaches a back filling a void with a different material, where that different material is “an air or gas”. This is disingenuous, as it is well known that neither air nor gas is a material as defined by the plain meaning of the word “material”. Further, the passage in Zdeblick et al. relied on by the Examiner says nothing about back filling a void with a different material. For at least this additional reason, Applicants submit that claim 16 is neither taught nor suggested by Zdeblick, et al.

CONCLUSION

Accordingly, in view of the above amendments and remarks, reconsideration of the objections and rejections and allowance of each of claims 1, 10-13, 15, 16, 30 and 32 in connection with the present application is earnestly solicited.

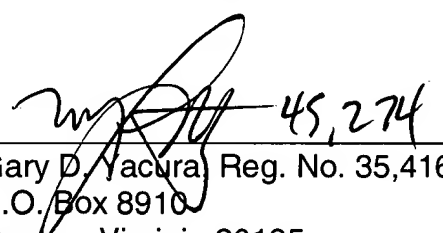
Should there be any outstanding matters that need to be resolved in the present application, the Examiner is respectfully requested to contact Matthew J. Lattig, Reg. No. 45,274 at the telephone number of the undersigned below.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 08-0750 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17; particularly, extension of time fees.

Respectfully submitted,

HARNESS, DICKEY, & PIERCE, P.L.C.

By

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Attachment: Annotated Sheet Showing Changes